COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
August 20, 2012
484-250-5920

SUBJECT: TVOP Amendment (Emission Reduction Credit Generation)
Application No: 23-00001
Sunoco Inc. (R&M), Marcus Hook Refinery
Marcus Hook Borough
Delaware County
APS: 346700, AUTH: 938378

TO: James D. Rebarchak
Regional Air Quality Program Manager
Air Quality Program
Southeast Region

FROM: George A Eckert
Permit Reviewer
Air Quality Program

THROUGH: Janine Tulloch-Reid, PE
Environmental Engineering Manager
Air Quality Program

THROUGH: Doug White
Legal Counsel, DEP

On August 15, 2012, the Department received an ERC application from Sunoco Inc., that dealt with the permanent shutdown of several previously permitted sources. These sources were permanently shut-down on December 31, 2011 as the refinery was idled while looking for a buyer for the facility. Sunoco has requested to bank these ERCs for use as netting or offsets at their Philadelphia Refinery.

Affected Sources:

040 – 10-4 Feed Heater
045 – 12-3 Desulphurization Heater
060 – 15-1 Crude Heater
075A – 17-2A Heaters (H01, H02, and H03)
078 – 17-2A, H04 Heater
099 – 12-3 Crude Heater
101 (including 101a) – FCCU and regenerator preheater
COB1 – CO Boiler #1
COB3 - CO Boiler #3
705 – 12-4 LSG Pre Heater
706 – 12-4 LSG Stabilizer Heater

These sources were installed over the course of many years and were all included in the facility's Title V Operating Permit.

There is also a consent decree requiring certain emission reductions (NOx and SOx) from the Fluid Catalytic Cracking Unit (FCCU, Source 101). The emission reductions from the shutdown of this source are not based on the Department's AIMS information, but are based on what would be allowed if the controls required by the consent decree were installed.

The application indicates that the 2007 and 2008 calendar years were representative years and therefore were chosen for the two-year averaging period for ERC generation for all pollutants, except for Green House Gases (GHG). GHG reports were required beginning in calendar year 2010 and forward, therefore 2010 and 2011 were chosen as representative years for this air pollutant. See attachments data during these years and for calculation methods. Tables 1, 2, and 3, below, summarize the emissions taken from the Department's AIMS report and the GHG reports to the US EPA.

Table 1
VOC, NOx (NO2), and SOX ERCs (tons)

Source Name/Number	VOC			NOx (NO2)			SOx		
	2007	2008	AVG	2007	2008	AVG	2007	2008	AVG
15-1 Crude Heater (Source 060)	5.3	4.8	5.05	143.2	129.7	136.46	0.16	0.14	0.15
17-2A H-01, H-02, H-03 Heater (Source 075)	2.9	2.53	2.72	60.5	53.57	57.04	0.05	0.06	0.06
17-2A H-04 Heater (Source 078)	0.4	0.29	0.35	7.2	5.22	6.21	0.01	0.01	0.01
12-3 CRUDE Heater H-3006 (Source 099)	4.9	4.28	4.59	96.3	82.66	89.48	0.13	0.13	0.13
12-3 Desulphurization Heater (Source 045)	0.4	0.25	0.33	7.5	4.61	6.05	0.01	0.01	0.01
10-4 FCC Unit (Sources 101 and 101A)	1.3	1.21	1.26	1259	1139	1199.1*	3037	2744	2891*
COB1 (CO Boiler #1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COB3 (CO Boiler #3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-4 Feed Heater (Source 040)	1.2	0.28	0.74	20.9	4.79	12.85	0.02	0	0.01
LSG HDS Heater (Source 705)	0.146	0.11	0.13	4.8	5.49	5.14	0.01	0.01	0.01
LSG Stabilizer Heater (Source 706)	0.15	0.01	0.08	1.5	0.65	1.07	0.01	0.04	0.02
Cooling Towers (111)	19.94	19.94	19.94	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal (not including the Source 101 & 101A covered by Consent Decree)			35.19			314.30			0.40
Source 101 & 101A- CD limits*						92.3			128.38
Grand Total (tons)			**35.19**			**406.60**			**128.78**

* The consent decree stipulates certain reductions be met through the installation of add-on control devices for NOx and SOx emissions and those reductions affect the 24-month averages shown in the table above.

Table 2
PM2.5, PM10, and CO ERCs (tons)

Source Name/Number	PM2.5			PM10			CO		
	2007	2008	AVG	2007	2008	AVG	2007	2008	AVG
15-1 Crude Heater (Source 060)	7.4	6.63	7.02	7.4	6.63	7.02	81.2	73.28	77.24
17-2A H-01, H-02, H-03 Heater (Source 075)	4	3.5	3.75	4	3.5	3.75	43.7	38.7	41.2
17-2A H-04 Heater (Source 078)	0.6	0.4	0.5	0.6	0.4	0.5	6.1	4.39	5.24
12-3 Crude Heater H-3006 (Source 099)	6.8	5.91	6.36	6.8	5.91	6.36	75.4	65.33	70.36
12-3 Desulphurization Heater (Source 045)	0.6	0.35	0.48	0.6	0.35	0.48	6.3	3.87	5.08
10-4 FCC Unit (Sources 101 and 101A)	323.2	307.5	315.36	323.2	307.51	315.36	412.3	317.54	364.92
COB1 (CO Boiler #1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COB3 (CO Boiler #3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-4 Feed Heater (Source 040)	3.5	0.77	2.13	3.4	0.77	2.13	0.6	0.13	0.36
LSG HDS HTR (Source 705)	0.16	0.42	0.29	0.16	0.42	0.29	0.0	0.01	0.00
LSG Stabilizer Heater (Source 706)	0.16	0.15	0.16	0.16	0.15	0.16	0.5	0.12	0.31
Cooling towers (111)	10.03	10.45	10.24	10.03	10.45	10.24	0.0	0.0	0.0
Total			**346.27**			**346.27**			**564.71**

25 Pa. Code § 127.207 requires that the ERCs be surplus, permanent, quantified, and enforceable. These are as follows:

Surplus – The emissions are surplus as they are in the current emission inventory and are not part of a SIP, attainment demonstration, emission limitation, or compliance plan, except as noted for NOx and SOx (as required by the Consent Decree). They are also not required to meet any regulation or emission limitation required by the Clean Air Act.

Permanent and Enforceable – The sources that generated these ERCs have been permanently shut down, though they will remain in place. If the company plans to bring these shutdown sources back into production, the company shall submit an appropriate plan approval application. Any subsequent emissions from these shutdown sources shall comply with all applicable regulations.

Quantifiable – This application for ERC has been reviewed, compared to the AIMS emissions reports, and 40 C.F.R., Part 98 (concerning GHG emissions), and is approved by the Department in the above amounts for the respective sources.

ERC Lifetime – According to 25 Pa. Code § 127.206(f), ERCs generated from a shutdown source expire for use as emission offsets 10 years after the date the source ceased emitting the ERC-generating emissions. The ERCs listed in the tables above were generated from the shutdown of sources and therefore have a life of ten (10) years from the date of shutdown (December 31, 2011). The expiration date will be December 30, 2021.

Recommendation – There are no remaining issues from the enforcement or permitting sections of the Department. I recommend approving the ERCs identified in Table 1 and Table 2 for the criteria pollutants and their precursors such as:

NOx (406.60),
VOCs (35.19),
SOx (128.78),
PM2.5 (346.27),
PM10 (346.27), and
CO (564.71).

The company has identified the following quantification of emissions of Green House Gases (GHGs) and their individual constituents, as well as Sulfuric Acid Mist ("SO3") in the ERC Registry application.

Table 3
Sulfuric Acid and GHG Emissions (tons)

Source Name/Number	"SO3"			CO2e		
	2007	2008	AVG	2010	2011	AVG
15-1 Crude Heater (Source 060)	0.0	0.0	0.0	115,647.80	106,557.03	111,102.42
17-2A H-01, H-02, H-03 Heater (Source 075)	0.0	0.0	0.0	45,831.32	43,992.46	44,911.89
17-2A H-04 Heater (Source 078)	0.0	0.0	0.0	10,692.31	5,808.57	8,250.44
12-3 Crude Heater H-3006 (Source 099)	0.0	0.0	0.0	98,947.96	85,219.92	92,083.94
12-3 Desulfurization Heater (Source 045)	0.0	0.0	0.0	5007.97	4630.32	4,819.15
10-4 FCC Unit (Sources 101 and 101A)	56.07	56.07	56.07	871,071.06	874,286.22	872,678.64
COB1 (CO Boiler #1)	0.0	0.0	0.0	77,079.32	74,089.00	75,584.16
COB3 (CO Boiler #3)	0.0	0.0	0.0	30,645.70	37,169.00	33,907.35
10-4 FEED eater (Source 040)	0.0	0.0	0.0	2,277.68	6206.06	4,241.87
LSG HDS Heater (Source 705)	0.0	0.0	0.0	18,904.89	17,583.45	18,244.17
LSG Stabilizer heater (Source 706)	0.0	0.0	0.0	12,945.76	11,015.39	11,980.58
Cooling Towers (111)	0.0	0.0	0.0	0	0	0.00
Total			**56.07**			**1,277,804.60**

Additional changes to the operating permit at this time are as follows:

- Removal of two cooling towers as they have been sold to Braskem America (15-2S and 15-2 Poly).
- Clarified the 'Grab Sample" condition for the boilers that samples are required only when operating on RFG and/or natural gas and RFG.
- Creation of a new source (number 139) for the cooling towers, which will remain in operation at this site.
- Removal of source group conditions pertaining to the group NOx, SO2, and PM emission limits for three combustion turbines (owned and operated by Next Era, formerly FPL), four (4) auxiliary boilers, FCCU catalyst regenerator (Part of Source 101), CO Boilers COB1 and COB3, and the combustion turbine, MH50 (owned and operated by Next Era, formerly FPL).